

D.5 Cultural Resources

This section identifies cultural resources that are present and could be affected by the approximately 70-mile proposed Concord to Sacramento Pipeline Project and the 60-mile Existing Pipeline ROW Alternative. It addresses the environmental baseline and regulatory setting (Section D.5.1), the regulations relevant to cultural resources (Section D.5.2), and defines the environmental impacts and mitigation measures by segment (Section D.5.3). Sections D.5.4 and D.5.5 describe the environmental impacts of the alternatives. Appendix 3 presents additional cultural resources information describing the general setting and history of the project area.

D.5.1 Environmental Baseline

This section, prepared by Basin Research Associates, relies on reports by William Self Associates, Inc. (WSA; Self, 2000, 2001; Martin and Self, 2002a-b, 2003), JRP Historical Consulting (Linn, 1997; Blosser, 2002 in URS), and URS (2002). These reports were prepared for SFPP to evaluate potential project impacts to cultural resources. This pipeline project is to replace the existing petroleum products pipeline located east of the proposed alignment. Because the Proposed Project and Existing Pipeline ROW Alternative routes are in similar settings, this section addresses both alternative routes.

Methodology – Records Search. A record and literature search was conducted to identify and evaluate the potential for the presence of cultural resources in and within a 0.5-mile radius of the Proposed Pipeline Alternative as part of research completed for the *Cultural Resources Assessment Report SFPP, L.P. Proposed Concord to Sacramento Pipeline Project*. Mr. Eric Strother, William Self Associates (WSA) staff archaeologist, conducted the primary records search at the California Historical Resources Information System (CHRIS), Northwest Information Center (NWIC), CSU Sonoma, Rohnert Park, on January 17, 2001 (File #01-46). The NWIC staff conducted additional record searches on February 2, 2001 (File #01-83), and November 8, 2001 (File #01-1081). The WSA report included a review of archaeological, ethnographic, historical, and environmental literature as well as records and maps on file at the CHRIS/NWIC. Previous cultural resource surveys were not reviewed as they were determined to have reduced importance given that WSA planned to inventory the entire corridor.

Another records search was conducted specific to the *Cultural Resources Technical Report for Proposed Peyton Slough Remediation Project* and included site records, previous survey reports, hand historical maps (e.g., Government Land Office [GLO] plats). In addition, known shipwrecks listed in the California State Lands Commission Database and other standard references were consulted (CHRIS/NWIC 01-1172, date not stated).

Agencies, Groups, and Individuals Consulted. The Native American Heritage Commission (NAHC) was contacted by WSA in February 2001 with a description of the Proposed Project and a request for a listing of local, interested Native American Representatives, and information on traditional or sacred lands within the project area and vicinity. Ms. Debbie Pilas-Treadway (NAHC) responded March 13, 2001; the search was negative and provided lists of Native Americans to contact (see Martin and Self, 2002a, Appendix D; 2002b, Appendix C: Native American Heritage and List of Native American Contacts). WSA contacted the NAHC again by letter in September 2002 noting that the records search and field survey were negative within the immediate project area and 0.25 mile of the project. Ms. Pilas-Treadway (NAHC) responded September 26, 2002, noting the absence of Native American cultural resources in the immediate project area and provided lists of Native Americans to contact. WSA sent individual Native

Americans letters dated October 9, 2002, to Native Americans on the NAHC list of September 25, 2002 (WSA, 2002b-z, aa-ac). After no response was received, an attempt to contact these individuals by telephone was undertaken on October 23, 2002, and November 6, 2002. No information about known or reported archaeological or traditional sites, or contemporary Native American sites or use areas was provided. Appendix 3 (Section 3.4) includes a table documenting Native American individuals and groups contacted by WSA and their comments (Martin and Self, 2003: Appendix A).

In addition, the NAHC and individual Native Americans were contacted as part of *the Cultural Resources Technical Report for Proposed Peyton Slough Remediation Project* (URS Peyton Marsh, ca. 2002: Appendix C, Table 4). The consultation was not available for this EIR; the report states that the consultation was negative. No sacred sites or Traditional Cultural Properties (TCPs) were identified in or near the project.

The State of California Office of Historic Preservation (CAL/OHP) was not contacted about the project because it does not have jurisdiction over the project. The views of CAL/OHP regarding the project are not known. No local agencies, historical groups, museums, and/or other individuals were contacted about the project because based on the results of the records searches (see “Methodology – Records Search” above) conducted for the project and given the overall rural setting of the project area, it is the opinion of WSA that such consultation was not warranted.

Field Surveys. An intensive archaeological field survey was conducted along the 70.7-mile proposed pipeline system Area of Potential Effects (APE) where property access was permitted. The survey was conducted within a 200-foot wide corridor (100 feet on either side of the pipeline centerline) over the majority of the area unless physical constraints reduced the corridor width. The actual construction corridor will be 100 feet wide. The archeological field survey of portions of the Proposed Pipeline Project was conducted by WSA Senior Archaeologist Ms. Leigh Martin, M.A., and crew members Anna Engberg, Scott Hill, and Susan Huster on November 27, 2001, December 3-7, 2001, and December 10-11, 2001. Ms. Martin and Kim Popetz² recorded five archaeological sites on January 9, 2002, and completed additional survey on January 24, 2002. Ms. Martin surveyed again on February 20-21, 2002 (see Martin and Self, 2002a:16-17: Table 4 for Proposed Pipeline Sections not Surveyed). Exposed ground surface in agriculture areas and other open areas was examined wherever possible. A cursory (non-documentary) assessment of built environment, including areas through rail/industrial areas and residential areas, was conducted. In addition, Addendum surveys were conducted by Ms. Leigh Martin. The Reroute No. 5 survey was conducted on July 3, 2002, and the *Proposed Wickland Connection Route* letter was completed on January 8, 2003 (Martin and Self, 2002b, 2003).

An archaeological field survey was also undertaken on January 8, 2002, by Brian Hatoff and Bryon Bass,² URS. A site specific survey and evaluation of a structure located outside the Rhodia property by Amanda Blosser of JRP Historical Consulting Services for the *Proposed Peyton Slough Remediation*

¹ Leigh A. Martin, M.A., has over 8 years in field archaeology with 4 years supervisory experience in the archaeology of California while in the employ of WSA. Kimberley Popetz, M.A., has 5 years of experience in archaeology with 2 years of supervisory experience while in the employ of WSA.

² Brian Hatoff, M.A., meets the professional archaeological standards of the Secretary of Interior and is a certified archaeologist by the Register of Professional Archaeologists (RPA). Bryon Bass, Ph.D., meets the professional archaeological standards of the Secretary of Interior and is a certified archaeologist by the Register of Professional Archaeologists (RPA). Years of experience not stated.

Project (URS, 2002: Appendix E). All other built environment structures within the remediation project had been surveyed and evaluated by JRP Consulting in 1997 (Linn, 1997).³

A field survey of the Existing Pipeline ROW Alternative was not conducted for this EIR. Twelve areas along the existing pipeline that had been trenched to locate and repair pipeline anomalies were surveyed by WSA. The pedestrian survey and inspection of the approximately 10-foot-long, 6-foot-wide and deep trenches on April 26-27, 2001, was negative for prehistoric or historic site indicators (Self, 2001).

D.5.1.1 Regional Overview

Existing Environment

The Concord to West Sacramento study area is situated on the western margin of California's Central Valley, one of two principal grassland communities that exist in California. Annual precipitation in the region varies from six to 29 inches with precipitation concentrated in the fall, winter, and spring months. This climate is much like that found in the Mediterranean: mild, rainy winters, and hot, dry summers. Temperatures in the summer are high, often reaching over 38 degrees C (100 degrees F). The combination of this climate and the arable soils of the Central Valley has been the catalyst for the extensive agricultural use of the area has resulted in the disappearance of much of the original grassland community. Grasslands persist, but the dominant species are completely different from those found 150 years ago by settlers (Brown, 1985:84, 87). With some exceptions, however, the flora and fauna have not changed as dramatically in this part of Contra Costa, Solano and Yolo Counties as in other areas of California. Animal life within the region is diverse. Unlike prehistoric times when animals such as pronghorn antelope, tule elk, mule, and lack-tail deer, and grizzly bear occupied the area, the region today favors small, herbivorous mammals — especially voles, pocket gophers, ground squirrels, and pocket mice (Brown, 1985: 87). The open areas attract some larger animals including deer, coyotes, rabbits, skunks, opossum, raccoons, and a number of birds including red-tailed hawks, buzzards, red-wing blackbirds, crows, turkey vultures, and other species.

Paleoenvironment

Most of the western United States was subjected to a series of climatic fluctuations over the past several millennia; the central interior valley portion of California is no exception. Warm/dry episodes were followed by intermittent cool/moist periods (Moratto et al., 1978). The Holocene or Recent Epoch has seen six cool periods followed by five warm periods. The Altithermal Period, ending about 2,900 years ago, was a warm/dry episode, which apparently had wide-ranging implications throughout the west, leading to changes in animal migrations and plant productivity and distribution. A cooler period followed for the next 1,400 years, followed by yet another warm/dry climate starting about 600 years ago, which remains to the present day.

Prior to the introduction of livestock to the region in the early 1800s, native grasses covered the upland environment throughout the area. Although the type of animals inhabiting the Central Valley before the influx of humans is largely known, the type of plants that may have occupied the valley grassland is not as well defined. Purple Needlegrass, a bunchgrass found only in California, may have been the dominant grass species (Brown, 1985:87). Refer to Section D.7 for a thorough discussion of paleontological resources in the project area.

³ Dr. Colin I. Busby, Basin Research Associates, as part of project familiarization, completed a field review of the majority of the Proposed Project on July 25, 2002. Dr. Busby meets the professional archaeological standards of the Secretary of Interior and is a certified archaeologist by the Register of Professional Archaeologists (RPA). He has over 27 years of experience in prehistoric and historic archaeology.

Cultural Setting

Prehistoric Context. The chronological sequence for the greater Sacramento River Delta region begins with the *Windmill Pattern*. Sites from this period date from about 4,500 to 2,500 years ago. Although earlier sites no doubt exist, sites from the “Paleo-Indian Period” and dating from about 10,000 to 4,500 years ago, are thought to be buried under Holocene alluvial deposits and are not well documented in this part of California (Ragir, 1972). Various scholars have suggested *Windmill Pattern* sites are associated with an influx of peoples from outside of California who brought with them an adaptation to river-wetland environments (Moratto, 1984:207).

Windmill Pattern sites are often situated in riverine, marshland, and valley floor settings, and atop small knolls above prehistoric seasonal floodplains. The variety of plant and animal resources within the immediate area would have attracted populations intent on making efficient use of such resources. Most *Windmill Pattern* sites have contained burials in what may be cemeteries. Typically, the remains are extended ventrally, oriented to the west, and contain copious amounts of “grave goods”. Grave artifacts often include large projectile points (spear or dart points) and a variety of fishing paraphernalia such as net weights, bone hooks, and spear points, as well as the faunal remains of large and small mammals. Seed-grinding implements at the sites show that gathering and processing of seed resources was also common, and other artifacts (e.g., charmstones, quartz crystals, abalone, and *Halotis* shell beads) suggest trade and a degree of ceremonialism were practiced.

The subsequent *Berkeley Pattern* (previously the “Middle Horizon”) covers a period from about 2,500 to 1,500 years ago. This pattern overlaps somewhat with *Windmill Pattern* attributes at the beginning and Late Prehistoric artifacts at the end. *Berkeley Pattern* sites are much more common and well documented, and therefore better understood, than *Windmill Pattern* sites. The sites are distributed in more diverse environmental settings, although a riverine focus is common. Deeply stratified midden deposits (resulting from generations of occupation) are common to *Berkeley Pattern* sites, as are an abundance of milling and grinding stones for the processing of vegetal resources. Projectile points are progressively smaller and lighter over time, culminating in the introduction of the bow-and-arrow during the late prehistoric period. As mentioned above, although there are shared traits with *Windmill Pattern* manifestations, artifacts unique to *Berkeley Pattern* sites include slate pendants, steatite beads, stone tubes, and ear ornaments, and, most importantly, burial techniques utilizing variable directional orientation, flexed body positioning, and a general reduction of mortuary goods (Fredrickson, 1973; Moratto, 1984).

Characterized as the *Augustine Pattern* (Fredrickson, 1973), the late prehistoric period (formerly the “Late Horizon”) ranges from about 1,500 to 150 years ago. This pattern is typified by intensive fishing, hunting, and gathering, the latter focusing on acorns, a large population increase, increased trade and exchange networks, increases in ceremonial and social attributes, and the practice of cremation (in addition to flexed burials). Certain artifact types also typify the pattern: bone awls for use in basketry manufacture, small notched and serrated projectile points indicative of introduction of the bow-and-arrow, occasional pottery, clay effigies, bone whistles, and stone pipes. The presence of certain types of artifacts suggests a southward-moving influx of Wintuan populations into the Sacramento Valley, providing an important stimulus to this pattern (Moratto, 1984:211). Evidence from several sites (e.g., mutilation of skeletons and Wintuan-type barbed points imbedded in human remains) suggests the expansion was not altogether friendly (Moratto, 1984:212; Ragir, 1972). The *Augustine Pattern* and the late prehistoric period can be characterized as the apex of Native American cultural development in this part of California.

Ethnographic and Historic Setting. Appendix 3 presents more detailed information on the ethnographic context of the region, and also on the Historic Era, beginning in the late 1700s when the first Spanish expeditions passed through the San Francisco Bay region. Until the mid-1800s, the era was characterized by development of missions and the introduction of Christianity, the influence of Mexico, and development of large ranches in the project area. The American Period began in 1848, and population growth expanded. The Carquinez Strait was key to the region's development, as was the railroad that passed through the area from the San Francisco Bay area to Sacramento and beyond.

D.5.1.2 Environmental Setting: Proposed Project

No prehistoric sites have been recorded or reported within the Proposed Project. Twelve recorded and known historic era resources within the Proposed Project APE have been identified; the following summary is arranged within each segment by milepost (MP) and includes known trinomials and primary numbers assigned to these sites.

Segment 1 (MP 0–6.1) – Contra Costa County and Carquinez Strait

Two potential historic resources were identified in Segment 1, the drainage system described below and a shipwreck that could be encountered in near shore or offshore construction along the Carquinez Strait.

- **Peyton Marsh Drainage System, MP 3.7 to 4.7.** This approximately 200-acre system (including the East Levee, network of drainage channels, and a tide gate structure) was built for mosquito abatement and is located east of I-680 just south of the Benicia Martinez Bridge between Bull's Head Point, Peyton Hill, and Vine Hill, in the City of Martinez (Linn, 1997). In addition to the other features, a small rectangular wood frame shed with a simple front gable building with corrugated metal panels at the roof and walls has been recorded in the Peyton Marsh (URS, 2002:3-2, 3-4, [Appendix E: form, not available for review]). The marsh drainage system and individual components have been previously evaluated as not appearing to retain a high degree of integrity for the potential period of significance, 1927-1939, under National Register Criteria a, b, or c. Nor does the system appear to satisfy California Register Criteria 1–4.⁴

Phase 1 and Phase 2 Carquinez Strait Crossing

- **Shipwreck Uncle Abe, MP 5 and MP 6.** The existence of this shipwreck is unconfirmed, but it may lie within Carquinez Strait, and is listed in the California State Lands Commission Database (USR, 2002:3-1 after CSLC, n.d.).

Segment 2 (MP 6.1–17.6) – Benicia and I-680 Frontage

Four historic properties have been identified in Segment 2:

- **Quarry House, MP 10.7, CA-Sol-392H/P-48-000179.** This building is possibly a remnant of a homestead with associated features including a quarry. The site is located at 1615 Lopes Road, three miles north of the City of Benicia, Solano County, and is about 200 feet from the pipeline ROW. The site includes a deteriorated one-story, two room rectangular structure of irregular-size cut sandstone blocks chinked with small stones and cement mortar built into the side of a hill; a man-made pond and associated landscaping with 24-foot long rock alignment (single course of basaltic rock); a dirt road; a trash pit and/or privy; a “dirt excavation” which may possibly represent foundations of a former structure. In spite of a period of significance 1850-1920, the site lacks integrity,

⁴ A site is not eligible for the California Register if it cannot be associated with significant events or persons; does not embody distinctive characteristics of a type, period, region, or method of construction or represents the work of a master, or possess high artistic values; or has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

and “. . . does not appear to be associated with events, persons, or likely to yield information important in history” (Waechter et al., 1993a; Martin and Popetz, 2002b/site forms; Martin & Self, 2002a:18-19, 21; USGS Vine Hill, 1980). The site does not appear eligible for inclusion on the California Register.

- **Stone House, MP 11.4**, CA-Sol-393H/P-48-000180, is located at 1701 Lopes Road, approximately 3.7 miles north of Benicia, Solano County, and is about 30 feet west of the pipeline project ROW. This deteriorated one-room structure of irregular cut block sandstone was built into the slope of a hill. The construction of this structure is similar to “Quarry House” (see above). The site has been described as part of a historic rural landscape with a period of significance of 1850-1930. The site appears to lack the architectural integrity required in order to be considered for inclusion on the National Register (NR), “but further investigation is necessary” (Waechter et al., 1993b/site form; Martin and Popetz, 2002c/site form; Martin & Self, 2002a:19, 21-22; USGS Vine Hill, 1980). To date site does not appear eligible for inclusion on the California Register.
- **Dairy Ranch, MP 12.6**, P-48-000539, is located at 2001 Lopes Road, approximately 1.5 miles south of the Marshview Road exit, south of the City of Fairfield, Solano County, at about 30 feet west of the pipeline ROW. The site consists of two residential dwellings, a milking barn and paddock, dairy house/office, animal/hay barn, outbuilding or shed (currently used a garage), and road. The complex dates to the 1930 through the 1960s and is associated with the beginnings of the modern dairy industry in Solano County. The site has been described as retaining some/little of its original integrity” but “. . . does not appear to meet NR criteria” [some site form; little text] (Martin & Popetz, 2002e/site form [some integrity]; Martin & Self, 2002a:22-23 [little integrity]; USGS Fairfield South). The site does not appear eligible for inclusion on the California Register.
- **Garibaldi Wildlife Refuge, MP 16.0**. This refuge, P-48-000492, is adjacent to the pipeline ROW on the south end of Ramsey Road in the Garibaldi Unit of Grizzly Island Wildlife Area, Cordelia, Solano County. This goose refuge in the Grizzly Island Wildlife area was a farm complex during the 1920s and a duck club in 1940, and consists of a large barn with attached sheds, house, garage, and airplane hanger and runway (not used since 1990). The airplane hanger, the building closest to the Proposed Project, is about 20 feet from the centerline. The site retains some integrity, but has been evaluated previously as not appearing to meet National Register criteria (Martin & Popetz, 2002d/site form; Martin & Self, 2002a:23-24; USGS Cordelia 1980). The site does not appear eligible for inclusion on the California Register.

Segment 3 (MP 17.6–24.5) – Cordelia

Two historic features occur along Segment 3:

- **Southern Pacific Railroad Tunnel, MP 19.9**. See Southern Pacific Railroad (SPRR) discussion under Segment 5 below.
- **Ranch House or Homestead, MP 22.6**. This site, CA-Sol-279H/P-48-000120, is a possible homestead or ranch house, stone foundation and “extensive dirt buildup,” located adjacent to the north edge of Cordelia Road, approximately 1,500 feet southwest of Beck Avenue, and 50 feet north of the pipeline ROW. No additional information is available for the site as it could not be accessed during the WSA inventory. The site has not been previously evaluated for either the National Register or California Register (Chavez, 1980b/site form [no USGS map]; Martin & Self, 2002a:19; USGS Fairfield South, 1980). At present, the site does not appear to satisfy California Register Criteria 1–4.

Segment 4 (MP 24.5–30.7) – Fairfield/Suisun City

One potential historic resource has been identified in Segment 4:

- **SPRR Track, MP 24.9-27.1**. About 2.2 miles of SPRR track exists in the Fairfield vicinity (see SPRR discussion under Segment 5).

Segment 5 (MP 30.7–65.1) – Solano and Yolo Counties Agricultural Area

Segment 5 includes five potential historic resources:

- Vanden Road Corral Complex, MP 31.8-31.8.** This complex, P-48-000555, was recorded on the west edge of Vanden Road at Canon Road. This partially fenced water well is capped by modern pump with an adjacent dilapidated wood and concrete platform base for a former elevated water tank, several water troughs, corrals with three separate holding areas, a covered stall, a loading chute, and a squeeze chute present. This complex has some historic association with cattle ranching in Solano County, but there is a lack of integrity along with absence of known association with persons or events important in history, unique characteristics, and the likelihood of yielding any further information of importance (Martin, 2002c/site form; Martin & Self, 2002b:7, 10-11; USGS Elmira, 1980.). This ranching complex does not appear to satisfy California Register Criteria 1–4.
- Water Trough, MP 33.0.** This circular concrete water trough (P-48-000556), a livestock feature, was recorded approximately 80 feet northwest of the intersection of North Gate and McCrory roads about 43 feet north of a modern irrigation canal. This trough is 76 inches in diameter, two feet high on a 6.5-foot asphalt and concrete base. This livestock feature has some historic association with cattle ranching in Solano County and, in regard to the application of National Register criteria, it does not retain integrity of workmanship and is not likely to yield further information (Martin, 2002d/site form; Martin & Self, 2002b:6-7, 10; USGS Elmira, 1980). This isolated landscape element does not appear to satisfy California Register Criteria 1–4.
- Water Tank, MP 36.0,** a defunct water tank (P-48-000540), is located on the north edge of Hay Road, about 20 feet north of the pipeline ROW, about 2,500 feet east of Lewis Road, and 1,300 feet west of the Box R Ranch Road in an agricultural area about 2.5 miles south of Elmira. This architectural feature is associated with farming and ranching and is shown as a windmill on the 1953 USGS Elmira topographic map. The water tank has been evaluated and does not appear eligible for the National Register as it lacks integrity, does not appear associated with events, person, or is likely to yield information important in history (Martin, 2002a/site form; Martin & Self, 2002a:24-25; USGS Elmira). This isolated landscape element also does not appear to satisfy California Register Criteria 1–4.
- Southern Pacific Railroad (SPRR), MP 41.5-54.4,** P-48-000541, is an approximately 12.9-mile portion of the former Sacramento Northern Railway (SNRR), a vast San Francisco Bay Area interurban railroad right-of-way including two trestles and a remnant crossing of the SPRR line have been formally recorded as P-48-000541 (at MP 30.8). The abandoned right-of-way runs through Bunker, Libform, and Saxon stops within the Proposed Project Segment 4 (MP 41.5-54.4) and discontinuous elements — an elevated earth mound, a graduated incline trestle over Vanden Road and the South Pacific tracks are present at MP 30.8. The majority of the tracks, railroad ties, spikes, and associated hardware have been removed from the grade which has been used for agriculture, sheep and cattle grazing, and as a right-of-way for farm equipment and local travel. The linear and discontinuous elements of the SNRR have been previously evaluated as lacking integrity and do not appear to satisfy National Register criteria as contributors to the SNRR which was evaluated as appearing eligible for the NR. Nonetheless, the SNRR alignment from Sacramento to Montezuma Slough (Montezuma near confluence of the Sacramento and San Joaquin Rivers opposite Pittsburg Landing) has been evaluated as appearing eligible for the NR (Martin et al., 2001/site form, 2002b/site form; Martin and Self, 2002a:25-26; Martin and Self, 2002b:7, 11; Fickewirth, 1992:90, 117; *linear right-of-way*: USGS Dozier, 1993; Liberty Island, 1993; Saxon, 1993; *discontinuous*: USGS Elmira, 1980). The SNRR extended as far north as the present-day Chico Airport and south across the Suisun Bay/Sacramento River/San Joaquin River vicinity to West Pittsburg (present-day Bay Point) (Walker, 1994: Maps CA-5, 6, 11, 14). The site, as recorded, does not appear to satisfy California Register Criteria 1–4. However, the SNRR could be associated with significant events as part of a vast railroad and interurban system.
- SPRR, MP 61.2-64.6.** An approximately 3.4-mile track segment just west of the E. Chiles Road interchange continues across Yolo Causeway (Martin & Self, 2002a:19) as well as approximately 2.2 miles of track near Fairfield (MP 24.9-27.1, Segment 4) and about 2.0 miles of track near Vacaville Junction (MP 30.4-32.4, Segments 4-5). The SPRR, from San Francisco to Monterey, is listed on the *California Inventory of Historic*

Resources under the theme Economic/Industrial (CAL/OHP, 1976:113; Martin & Self, 2002a:31-32; USGS Davis, 1992, Elmira, 1980, Fairfield South, 1980, Fairfield North, 1980, Sacramento, 1992). In addition, a railroad trestle centered on MP 62 (HRI 6/193) of the proposed route is located parallel to I-80 across the Yolo Bypass. This trestle was built after an 1899 fire which destroyed the tracks and trestle. One of two old railroad bridges in Yolo County, the trestle has been evaluated as significant for type and length [not stated] (Les, 1986/form). Another component, an arched railroad tunnel cut through rock on the SPRR main line over the SPRR tracks near Thomasson Lane, date unknown in the City of Fairfield, is located at MP 19.9, Segment 3 (possibly 500 feet tunnel near Quarry and Thomasson). The tunnel is listed on the Central Solano County Cultural Heritage Commission inventory of building and features (Central Solano County Cultural Heritage Commission (CSCCHC), 1977:92, 103, #55). While various elements of the SPRR such as depots and stations have been listed on the National Register and are automatically included on the California Register, the entire system has not been listed or determined eligible for the National Register. The SPRR system does not appear to satisfy California Register Criteria 1–4 due to a lack of integrity, but it can be associated with significant events or persons (Criteria 1–2). However, the system does not embody distinctive characteristics of a type, period, region, or method of construction or represent the work of a master, or possess high artistic values or has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation (Criteria 3–4). The tunnel could be eligible for the California Register under Criterion 3. If the system as a whole were eligible, the tunnel would then be a potential contributor.

Segment 6 (MP 65.1–69.9) – West Sacramento

No prehistoric or historic era cultural resources have been identified in Segment 6.

Segment 7 – Wickland Connection

No prehistoric or historic era cultural resources have been identified along the Wickland Connection.

D.5.1.3 Environmental Setting: Existing Pipeline ROW Alternative

No prehistoric and six historic period cultural resources have been identified in the Existing Pipeline ROW Alternative. The historic sites are:

- **Shipwreck *Uncle Abe*, MP 5 and MP 6.** The existence of this shipwreck is unconfirmed within Carquinez Strait.
- **Peyton Marsh Drainage System, MP 3.8 to 4.5.** See Proposed Project, Segment 1.
- **Southern Pacific Railroad, MP 6.5–57.8 and 53.7.** Most of the Existing Pipeline ROW Alternative is installed within the SPRR ROW. HRI 6/193, a trestle, has been formally recorded at MP 53.7 of the existing route or MP 62 along the proposed route (see discussion in Proposed Project Segment 5).
- **Sacramento Northern Railroad, MP 26.6, P-48-000541.** Discontiguous elements of this former railroad system include an elevated earth mound, a graduated incline trestle over Vanden Road and the Southern Pacific tracks (see Proposed Project Segment 5 above).
- **Vanden Road Corral Complex, MP 27.6, P-48-000555,** is addressed in see Proposed Project Segment 5, above.
- **Davis Junction, MP 47.9.** Davis Junction on the California Pacific Railroad was a major junction on the CPR main line from Vallejo to Davisville (Davis) in Yolo County. It was opened on August 24, 1868 after laying track eastward to the Sacramento River. The line, northward to Woodland and on to Yuba City, was completed in November 1868. It soon became part of the major transcontinental route of the Central Pacific Railroad Company. It is on the *California History Plan* (CAL/OHP, 1973:218) and *California Inventory of Historic Resources* under the theme of Economic Industrial (CAL/OHP, 1976:79, 277). The Southern Pacific Railroad station at Davis, a listed National Register property, is located within the “Y” north of the Existing Pipeline ROW Alternative at H and 2nd Streets. The junction does not appear to satisfy California Register Criteria 1–4.

Mitigation Segment EP-1

Four historic period cultural resources have been identified along the Existing Pipeline ROW Alternative Mitigation Segment EP-1:

- **Dairy Ranch, MP 12.6**, P-48-000539, is addressed above under Proposed Project Segment 2.
- **Garibaldi Wildlife Refuge, MP 16.0**, P-48-000492, is addressed under Proposed Project Segment 2.
- **SPRR, MP 19.9**. This railroad tunnel is addressed under Proposed Project Segment 5.
- **Ranch or Homestead, MP 22.6**, CA-Sol-279H/P-48-000120, is described above under Proposed Project, Segment 3.

Mitigation Segment EP-2

No prehistoric or historic era sites have been recorded or reported within the mitigation segment.

D.5.2 Applicable Regulations, Plans, and Standards

D.5.2.1 Federal

The National Historic Preservation Act (NHPA) of 1966 (as amended) established the federal government's policy on historic preservation and the programs, including the National Register of Historic Properties, through which that policy is implemented. Under the NHPA, historic properties include “. . . any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places” (16 USC Section 470w (5)).⁵ The NHPA of 1966 (as amended) and its implementing regulations (16 USC Section 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63) require the agency(ies) to consider the effect of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment on any undertaking that could adversely affect cultural properties listed or eligible for listing on the NRHP.

If a Clean Water Act (CWA) Section 404 permit is required for construction (wetland fills or crossings), the NHPA of 1966 (as amended) and its implementing regulations (16 U.S.C. Section 470 et seq., 36 CFR Part 800, 36 CFR Part 60, and 36 CFR Part 63) also apply. The U.S. Army Corps of Engineers (USACE), as lead federal agency for issuing the Clean Water Act (CWA) Section 404 permit, would be the lead agency for NHPA Section 106 compliance and consultation with the SHPO and ACHP would be required.

D.5.2.2 State

The regulatory framework that mandates consideration of cultural resources in project planning includes federal, State, and local governments. Laws and regulations have been developed to protect cultural resources

⁵ The National Register criteria for evaluation include: (1) is at least 50 years old; (2) retains integrity of location, design, setting, materials, workmanship, feeling, and association; and (3) has one or all of the following characteristics of association: (a) “. . . with events that have made a significant contribution to the broad patterns of our history;” (b) “. . . with the lives of persons significant in our past;” (c) “. . . that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;” or, (d) “. . . have yielded, or may be likely to yield, information important in prehistory or history.”

that may be affected by actions that these bodies undertake or regulate. Both the California Environmental Quality Act (CEQA) and local requirements apply. CEQA requires that a project applicant determine potential impacts on both historical and archaeological cultural resources and mitigate impacts on historically or culturally significant resources.

Resource Definition

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events or sites of traditional/cultural importance to various groups. The analysis of cultural resources can provide valuable information on the cultural heritage of both local and regional populations. CEQA requires review of existing information and surveys to determine if a project will have a significant effect on archaeological sites or a property of historic or cultural significance to a community or ethnic group eligible for inclusion in the California Register of Historical Resources (CRHR) (CEQA *Guidelines*).

Historical Resources

CEQA equates a substantial adverse change in the significance of a historical resource with a significant effect on the environment (Section 21084.1 of the Public Resources Code) and defines substantial adverse change as demolition, destruction, relocation, or alteration that would impair historical significance (Section 5020.1). Section 21084.1 stipulates that any resource listed in, or eligible for listing in, the California Register of Historical Resources (CRHR)⁶ is presumed to be historically or culturally significant.

Resources listed in a local historic register or deemed significant in a historical resource survey (as provided under Section 5024.1g) are presumed historically or culturally significant unless the preponderance of evidence demonstrates they are not. A resource that is not listed in, or determined to be eligible for listing in, the CRHR, is not included in a local register of historic resources, or is not deemed significant in a historical resource survey may nonetheless be considered historically significant by the lead agency for purposes of CEQA (Section 21084.1; see Section 21098.1).

Archaeological Resources

Where a project may adversely affect a unique archaeological resource, CEQA Section 21083.2 requires the Lead Agency to treat that effect as a potential significant environmental effect. When an archaeological resource is listed in or is eligible to be listed in the CRHR, Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect. Sections

⁶ A historical resource may be listed in the CRHR if it meets one or more of the following criteria: “(1) it is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; (2) it is associated with the lives of persons important to local, California or national history; (3) it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or (4) it has yielded or has the potential to yield information important in the prehistory or history of the local area, California or the nation.” Automatic listings include properties listed in the National Register, determined eligible for the National Register either by the Keeper of the National Register or through a consensus determination on a project review, or State Historical Landmarks from number 770 onward. In addition Points of Interest nominated from January 1998 onward will be jointly listed as Points and in the California Register. Landmarks prior to 770 and Points of Historical Interest may be listed through an action of the State Historical Resources Commission (CAL/OHP, ca. 1999).

21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Definitions

Public Resources Code 21083.2 (g) defines a unique archaeological resource to be: An archaeological artifact, object, or site, about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: (1) contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information; (2) has a special and particular quality such as being the oldest of its type or the best available example of its type; or, (3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

Section 21084.1 requires treatment of any substantial adverse change in the significance of a historical resource listed in, or eligible to be listed in, the CRHR as a significant effect on the environment. The definition of "historical resource" includes archaeological resources listed in or formally determined eligible for listing in the CRHR and by reference, the NRHP, California Historical Landmarks, Points of Historical Interest, and local registers.

Public Resources Code Sections 5020.1 and 5024.1 provide the following definitions:

- *Historic district* means a definable unified geographic entity that possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.
- *Historical landmark* means any historical resource that is registered as a State historical landmark pursuant to Section 5021.
- *Historical resource* includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic agricultural, educational, social, political, military, or cultural annals of California.
- *Local register of historic resources* means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution.
- *Substantial adverse change* means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.

A resource identified as significant in a historical resource survey may be listed in the CRHR if the survey meets all of the following criteria:

- The survey has been or will be included in the State Historic Resources Inventory.
- The survey and the survey documentation were prepared in accordance with Office of Historic Preservation procedures and requirements.
- The resource is evaluated and determined by the Office of Historic Preservation to have a significance rating of Category 1 to 5 on Department of Parks and Recreation Form 523.
- If the survey is five or more years old at the time of its nomination for inclusion in the CRHR, the survey is updated to identify historical resources that have become eligible or ineligible due to changed circumstances or further documentation and those that have been =demolished or altered in a manner that substantially diminishes the significance of the resource.

Other California Laws and Regulations

Other State level requirements for cultural resources management appear in the California Public Resources Code Chapter 1.7, Section 5097.5 (Archaeological, Paleontological, and Historical Sites), and Chapter 1.75, beginning at Section 5097.9 (Native American Historical, Cultural, and Sacred Sites) for lands owned by the State or a State agency.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the Public Resources Code, and falls within the jurisdiction of the Native American Heritage Commission (NAHC).

D.5.2.3 Regional and Local

The Proposed Project and the Existing Pipeline ROW Alternative proceed through the Counties of Contra Costa, Solano, and Yolo and the Cities of Martinez, Benicia, Suisun City, Fairfield, and West Sacramento. In addition, the Existing Pipeline ROW Alternative will proceed through the Cities of Dixon and Davis and the unincorporated areas of Avon and Elmira.

D.5.3 Environmental Impacts and Mitigation Measures for the Proposed Project

D.5.3.1 Introduction

Research completed for the project suggests a low to moderate level potential for the exposure of as yet unknown prehistoric archaeological resources within the general project alignment with a moderate to high potential for areas along and within 0.25 miles of the various creeks and waterbodies. There appears to be a low to moderate potential for the presence of significant and/or intact subsurface Hispanic Period/American Period historic archaeological deposits.

D.5.3.2 Definition and Use of Significance Criteria

Thresholds of significance for cultural resource impacts for the project are defined as situations where construction or operation of the project could:

- Result in damage to, the disruption of, or adversely affect a property that is listed in the California Register of Historical Resources (CRHR) or a local register of historic resources as per Section 5020.1 of the Public Resources Code.
- Cause damage to, disrupt, or adversely affect an important prehistoric or historic archaeological resource such that its integrity could be compromised or eligibility for future listing on the CRHR diminished.
- Cause damage to or diminish the significance of an important historic resource such that its integrity could be compromised or eligibility for future listing on the CRHR diminish.

D.5.3.3 Impacts of Pipeline Construction

The preferred method of mitigation is for construction projects to avoid areas where significant cultural resources are present. However, if avoidance is not possible, specific protective measures can be implemented to reduce the potential adverse impacts on cultural resources to less than significant levels. The CSLC will provide a cultural resources monitor to observe construction activities and ensure that impacts to resources are minimized. The monitor will ensure that mitigation measures defined below are implemented.

Impacts and Mitigation Measures for Cultural Resources

Ground-disturbing construction activities associated with the Proposed Project have the potential to directly impact cultural resources by disturbing both surface and subsurface soils. Such disturbance would result in the loss of integrity of cultural deposits and possible loss of information, and the alteration of a site setting. Furthermore, potential indirect impacts could occur to cultural resources from vandalism due to increased project area access during construction. The following three types of potential impacts could result from Proposed Project construction:

- Impacts to recorded and/or reported sites (Impact Cul-1).
- Impacts on unknown/unrecorded sites (Impact Cul-2).
- Impacts on Native American remains and burial related artifacts (Impact Cul-3).

The following sections describe impacts and mitigation measures. These measures, if implemented, would reduce the potentially significant impacts of the project to less than significant levels (Class II). These measures are applicable to both the Proposed Project and/or Existing Pipeline ROW Alternative. Following the mitigation measures, the project-specific impacts are described by segment, along with a listing of relevant mitigation measures for each impact.

Impact Cul-1: Impacts on Recorded and/or Reported Sites

Identified cultural resources within and adjacent to the project alignment may be damaged or destroyed by construction operations. (Potentially Significant, Class II)

Impact Discussion

As described in Section D.5.1.2, several recorded sites are identified within 50 feet of the proposed ROW. Subsurface disturbance during pipeline construction will include surface preparation for construction lay down and stockpile areas, work areas, access roads, and excavations associated with pipeline removal and pipe replacement or the placement of new pipe. Surface preparation will include blading/grading for yards, lay down, and material stockpile. Pipeline removal/replacement and/or new installation will require trenching (cut and cover) using appropriate excavation equipment to cut to depths of 5-7 feet and the excavation of bore pits (sending/receiving) of an undetermined area up to 15 feet deep for either jack-and-bore or horizontal directional drilling for pipeline placement under waterways, highways, and other designated areas. Trenching impacts are very specific to the alignment itself and will often be within previously disturbed soils (e.g., existing pipeline alignment, roads, etc.). Roadways typically consist of an asphalt-concrete surface underlain by an engineered full subgrade to a depth of perhaps 10 to 14 inches below street grade. Natural soils may exist below this depth, and it is within those soils that cultural materials, if any, would be located. Construction and lay down areas would be adjacent to excavated bore pits. Additional ground disturbing impacts could include trenching for pipeline anomalies, infrastructure foundations as well as for underground utilities connections.

Mitigation Measures for Impact Cul-1: Impacts on Recorded and/or Reported Sites

Cul-1a Archaeological Monitoring and Site Avoidance. Prior to commencement of grading, SFPP shall revise the alignment to the extent feasible to avoid all archaeological sites by at least 50 feet without exacerbating other environmental impacts. Archaeological sites within 100 feet of the alignment shall be barrier fenced or otherwise protected to prevent accidental disturbance during construction, and the Cultural Resources Monitor shall be present when construc-

tion is occurring within 200 feet of identified sites. The archaeological monitoring program shall include the following tasks:

- Pre-construction Assessment and Construction Training (see Cul-1c).
- Construction monitoring.
- Site recording and evaluation.
- Mitigation planning.
- Curation.
- Report of Findings.

Cul-1b Approval of Erosion Control Procedures. The Cultural Resources Monitor shall review and approve any erosion control and revegetation procedures (as required in Mitigation Measure HS-1c) in the vicinity of a known significant site prior to the implementation of the erosion control and revegetation programs.

Cul-1c Cultural Resources Awareness Training. All construction personnel shall be trained by the Cultural Resources Monitor regarding the potential for exposing cultural resources, including prehistoric and historic resources during construction, the locations of potentially sensitive areas, and protocols to treat unexpected discoveries. Training shall be implemented prior to the initiation of construction or ground-disturbing activities. Training shall inform all construction personnel of the procedures to be followed upon the discovery of archaeological materials including Native American burials.

Residual Impact: With implementation of Mitigation Measures Cul-1a through Cul-1c, and general procedures similar to those described above, impacts to known cultural resources sites would be less than significant (Class II).

Impact Cul-2: Impacts on Unknown/Unrecorded Sites

Cultural resources that are presently unknown may be affected by project construction. (Potentially Significant, Class II)

Impact Discussion

Surveys have been completed for much of the project area and identified resources are described in Section D.5.1 above. However, over 16 miles of the approximately 70-mile route were not been surveyed by SFPP's consultant due to restricted access. This will be completed prior to construction, however. Table D.5-1 lists the areas for which surveys have not yet been completed, by milepost. The table also indicates why the surveys were not completed and presents notes about the site.

In addition to areas that have not yet been surveyed, there is the possibility that unrecorded sites will be discovered during construction. Therefore, it is important that cultural resources monitoring take place in identified areas, and that appropriate data recovery be implemented in the event of a discovery. In the absence of such monitoring (defined in mitigation below), the impact to cultural resources would be significant, but impacts can be reduced to less than significant levels (Class II) with implementation of Mitigation Measure Cul-2a.

Table D.5-1. Proposed Project Sections Not Surveyed

Milepost	Description	Notes/Comments
.03	Central Contra Costa Flood Control Channel east side of Pacheco Creek. Sloped area into channel concrete covered.	No permit ; Low sensitivity
8.8-9.3	West side of 2nd St (Park Rd. to Herman Rd.) Visually inspected only from property fence line west, no cultural resources noted.	No permit; Cattle pasture
11.4	Stone House 1745 Lopes Rd. south of Parish Rd. exit off Hwy 680. Owner Villarreal denied access.	Cultural resource recorded from road
13.8-13.9	East side of Lopes Rd. within Marshview Rd. interchange. Area heavily disturbed due to freeway construction.	No permit; Low sensitivity
14.7-14.9	West side of Lopes Rd. Cattle pasture visually inspected from fence line. No cultural resources (C/R's) observed.	No permit; Low sensitivity
15.9-16.8	East side of Ramsey Rd. marshland visually inspected from road. No cultural resources observed.	No permit; Low sensitivity
19.7-20.4	PG&E sections, Ambrose property (east and west of Southern Pacific Railroad (SPRR) west of Thomasson Rd.	No permit
21.6-21.8	East side of SPRR west of Chadbourne. Newly cultivated farmland.	No permit; Low sensitivity
22.5-22.7	North side of Cordelia Rd south of Beck Ave. Plowed field. Site CA-SOL-279H located near road. Possible remains of homestead (stone foundation and extensive dirt buildup).	No permit; Sensitive
26.4-26.5	Randig property on SE side of Railroad Ave., grass covered field visually inspected from road. No cultural resources observed.	No permit; Low sensitivity
28.7-29.8	Huntington Drive windshield survey of industrial and grass covered level fields.	No permit; Low sensitivity
30- 34	Vanden and Canon Roads, west side of North Gate Road to McCrory Road (windmill and tank located at intersection)	No permit; 1 Cultural Resource noted
34.7-35.4	North side of Hay Road, east of Meridian	No permit; Low sensitivity
37.3-41.3	Hay Road east from Dally Rd. both sides through farm land to western edge of Triplett property	No permit; Low sensitivity
45.1-45.2	Pitto property on west side of line between Swan Road and Sikes Road	No permit; Low sensitivity
45.3-46.3	Sequeira, Pitto farmland 50' east of RR R/W (visually inspected from edge of RR R/W)	No permit; Low sensitivity
48.9-50.1	Rasmussen farm property east of RR R/W and Yolano Road Area visually inspected from fence line. No C/R's observed.	No permit; Low sensitivity
50.7	Small corner of Caglia parcel on Mace Blvd. Farmland under cultivation visually inspected from road. No C/R's observed.	No permit; Low sensitivity
54.4-55	Michael Finch farm property. Area under cultivation.	No permit; Low sensitivity

Mitigation Measures for Impact Cul-2: Impacts to Unknown/Unrecorded Sites

Cul-2a Archaeological Site Monitoring and Data Recovery. The Cultural Resources Monitor shall monitor all construction within 200 feet of archaeological sites and sensitive areas, including (a) all areas not surveyed, (b) areas determined to have a potential for buried cultural resources, and (c) traditional properties identified by local Native Americans. If cultural resources, such as lithic debitage or groundstone, shell midden, historic debris, building foundations, or human bone, are discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the site until the Cultural Resources Monitor can assess the significance of the find and, if necessary, develop appropriate treatment measures in accordance with the CSLC, the State Historic Preservation Officer (SHPO), and other appropriate agencies.

Residual Impact: Implementation of Mitigation Measure Cul-2a would ensure that unanticipated cultural resources discovered during construction were properly evaluated and/or treated, so residual impacts would be less than significant (Class II).

Impact Cul-3: Impacts on Native American Remains and Burial-Related Artifacts

Project construction has the potential to expose Native American remains at both recorded and as yet unknown locations. (Potentially Significant, Class II)

Impact Discussion

Surveys conducted along the Proposed Project ROW did not identify Native American remains. However, due to the extent of trenching that would occur during construction of the 70.7-mile pipeline system, these remains could be discovered. Mitigation Measure Cul-3a is recommended to reduce these impacts to less than significant levels.

Mitigation Measures for Impact Cul-3: Impacts on Native American Remains and Burial-Related Artifacts

Cul-3a Native American Coordination. Native American remains shall be treated in accordance with State law. The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and Sections 5097.94 and 5097.98 of the Public Resources Code, and falls within the jurisdiction of the Native American Heritage Commission (NAHC). Appropriate security measures shall be implemented to ensure that any remains are not disturbed prior to their removal.

Residual Impact: This impact would be less than significant with implementation of Mitigation Measure Cul-3a (Class II).

D.5.3.4 Impacts of Pipeline Accidents

Pipeline accidents including spills and ruptures that require subsurface repairs could result in the unexpected discovery of buried cultural or Native American resources. Implementation of the mitigation measures for Impacts Cul-1, Cul-2, and Cul-3 will ensure that impacts are less than significant (Class II).

D.5.3.5 Impacts of Pipeline Operation

Normal operation of the pipeline operation would have no effect on cultural resources. No mitigation measures are necessary.

D.5.3.6 Impacts by Segment

There is a low to moderate potential for the discovery of unknown buried cultural resources during pipeline construction based on the archival research and field data, and the 16 miles of the route that were not surveyed. No recorded California Register of Historical Resources eligible resources have been identified in or adjacent to the Area of Potential Effects for the Proposed Project. However, it is possible that unexpected significant cultural resources could be found during construction.

Implementation of the mitigation measures for Impacts Cul-1 would ensure that impacts to identified sites are less than significant (Class II). Mitigation measures for impacts Cul-2 (unknown resources) and Cul-3 (Native American burials) would be applicable to all segments.

Segment 1 (MP 0–6.1) – Contra Costa County and Carquinez Strait

The Proposed Project may impact one recorded site in Segment 1 which does not appear eligible for the California Register: the approximately 200-acre Peyton Marsh Drainage System south of MP 3.9 and north of 4.7. The Proposed Project appears to cross this site. Mitigation Measures Cul-1a through Cul-1c would ensure that impacts at this site were less than significant.

Phase 1 Carquinez Strait Crossing

Excavation of existing pipe to complete the connection with new pipeline may expose unknown cultural resources including maritime features along the shoreline or inland of the shoreline. Construction of work yards or new valve facilities may also result in the exposure of as yet unknown cultural resources. No known land resources have been recorded in the proposed connection area. Mitigation Measures Cul-2a would ensure that impacts to unknown resources would be less than significant.

Phase 2 Carquinez Strait Crossing

When technology is available, horizontal directional drilling will be used to construct a new pipeline crossing under the Carquinez Strait. The proposed depth of pipeline should not affect any maritime resources (e.g., submerged ships, features, etc.) within the strait. This phase will result in the excavation of two work areas/bore pits (one at the insertion and one at the termination point with the work area for each approximately 200 by 200 feet) at locations along the shore/inland of the shoreline. Associated work areas and possible lay down areas/storage yards will be required. Other facilities necessary to manage and monitor the pipeline (e.g., valve facility, etc.) may be installed. Excavations for bore pit(s) may expose unknown cultural resources including maritime features while grading for associated facilities may expose as yet unknown cultural resources. No known land resources have been recorded in the proposed work areas, but mitigation measures similar to those described in Section D.5.3.3 would ensure that impacts are less than significant.

Segment 2 (MP 6.1–17.6) – Benicia and I-680 Frontage

Four sites have been identified in Segment 2: CA-Sol-392H/P-48-000179, “Quarry House,” a remnant of a homestead, at MP 10.5; CA-Sol-393H/P-48-000180, a “Stone House” at MP 11.4; P-48-000539; a former “Dairy Ranch” at MP 12.6; and P-48-000492, the “Garibaldi Wildlife Refuge” at MP 160.0. The Proposed Project appears to avoid these sites, but Mitigation Measures Cul-1a through Cul-1c should be implemented to ensure appropriate protection.

Segment 3 (MP 17.6–24.5) – Cordelia

Two cultural resources have been identified in Segment 3: SP Tunnel at MP 20.3 (see HRI 6/193 Southern Pacific Railroad (SPRR or SP) Segment 5 below) CA-Sol-279H/P-48-000120, and, a possible homestead or ranch house at and MP 22.6. The Proposed Project appears to avoid these sites, but Mitigation Measures Cul-1a through Cul-1c should be implemented to ensure appropriate protection.

Cordelia Mitigation Segment

This mitigation segment was developed to avoid sensitive biological and water resources within Cordelia Marsh and Slough. The 2.6-mile segment diverges from the proposed route at MP 17.6 and rejoins the proposed route at approximately MP 20.0. The Cordelia Mitigation Segment parallels Ramsey Road until Cordelia Road, where it continues along Cordelia Road to the UPRR ROW where it rejoins the proposed route (see Figure D.4-3).

Because the Cordelia Mitigation Segment is either immediately adjacent to or within disturbed road ROWs, it is unlikely that previously unknown cultural resources would be impacted during its construction. One known historic resource (Southern Pacific Railroad tunnel) exists near MP 19.9 of the proposed route. However, it is anticipated that the Cordelia Mitigation Segment would avoid this resource. Because the Cordelia Mitigation Segment would pass through the historic center of the town of Cordelia, there is a greater potential for discovery of unknown historic resources along this route. But the original route may encounter more prehistoric resources, because it passes through areas that have not been subject to significant excavation. Implementation of mitigation measures recommended for Impacts Cul-1 and Cul-2 would ensure that all potential impacts are reduced to less than significant levels (Class II). Because the likelihood of encountering historic or prehistoric resources along these routes is unknown, it is not possible to say which segment is preferred.

Segment 4 (MP 24.5–30.7) – Fairfield/Suisun City

An elevated/engineered earth mound (trestle remains) has been noted at MP 30.7 (see P-48-000541, former Sacramento Northern Railway (SNRR) Segment 5 below). The Proposed Project will not affect any of the values for which the resource may be eligible for inclusion on the California Register. Monitoring is not required, except as defined in Mitigation Measures Cul-2a and Cul-2b.

Segment 5 (MP 30.7–65.1) – Solano and Yolo Counties Agricultural Area

Five sites have been identified in Segment 5: P-48-000555 Vanden Road Corral Complex at MP 31.75-31.8; P-48-000556, a circular concrete water trough, a livestock feature at MP 33.0; P-48-000540, a defunct water tank at MP 36.0; P-48-000541, an approximately 12.9-mile portion of the former Sacramento Northern Railway (SNRR) at MP 41.5-54.4; and an approximately 3.4-mile track segment of Southern Pacific Railroad (SPRR or SP) between MP 61.2 and MP 64.6, with HRI 6/193, a railroad trestle centered on MP 62 (and Tunnel in Segment 3). The Proposed Project appears to avoid the five resources, however Mitigation Measures Cul-1a through Cul-1c should be implemented to ensure resource protection. In addition, the Proposed Project will not affect any of the values for which the SNRR and SP may be eligible for inclusion on the California Register.

Segment 6 (MP 65.1–69.9) – West Sacramento

No prehistoric or historic era cultural resources have been identified in Segment 6. Monitoring is not required, except as defined in Mitigation Measures Cul-2a and Cul-2b.

Segment 7 – Wickland Connection

No prehistoric or historic era cultural resources have been identified in the Wickland Connection. Monitoring is not required, except as defined in Mitigation Measures Cul-2a and Cul-2b.

D.5.3.7 Impacts of Proposed Station Changes

No specific resources have been identified at either the Concord Station or Sacramento Station. Implementation of the mitigation measures for Impact Cul-2 during construction will ensure that impacts are less than significant (Class II).

D.5.3.8 Cumulative Impacts

In general, the total land area affected by the Proposed Project is small in relation to the general study area. Any cultural resources found during construction or during maintenance in the project area could provide information of value in the interpretation of the region's prehistory and history. However, since the project would not directly affect any recorded or significant cultural resources, it would not likely cause significant cumulative impacts. However, if construction operations were to expose a large, stratified, buried prehistoric or historic archaeological site, the possibility of cumulative impacts would arise because such sites are highly significant, and many have been destroyed or damaged by development and other activities prior to systematic study. Any potential impacts to an unknown archaeological site would be minimized to less than significant levels by evaluation and the development of a treatment plan to mitigate project effects as identified in Mitigation Measure Cul-2a above.

D.5.4 Environmental Impacts and Mitigation Measures for the Existing Pipeline ROW Alternative

The Existing Pipeline ROW Alternative would build an entirely new pipeline following the alignment of SFPP's existing pipeline, mostly within railroad ROW. Impacts would be similar to those for the Proposed Project, though because the railroad ROW is already disturbed, the likelihood of discovering unknown resources would be small. Prior literature reviews by URS (2002) suggest a relatively low archaeological sensitivity with the exception of the area north of Elmira to the Yolo Bypass covering approximately 12 linear miles. This area, at the edge of an ecotone between marsh and upland, would have been favorable for prehistoric occupation. All mitigation measures recommended for the Proposed Project (Cul-1a through Cul-1c and Cul-2a) should also be implemented for the Existing Pipeline ROW Alternative to ensure that impacts would be less than significant.

Mitigation Segments EP-1 and EP-1

There is a low to moderate potential for exposing subsurface cultural resources during pipeline construction of the Existing Pipeline Mitigation Segments EP-1 and EP-2.

Mitigation Segment EP-1. No prehistoric resources and four historic period cultural resources have been identified in EP-1. This mitigation segment includes Segments 2 and 3 of the Proposed Project. Two sites have been identified in EP-1 Segment 2,: P-48-000539, Former "Dairy Ranch" at MP 12.6 and the P-48-000492, "Garibaldi Wildlife Refuge at MP 16.0. In addition, two sites have been identified in EP-1 Segment 3: a Southern Pacific Railroad tunnel at MP 19.9 and CA-Sol-279H/P-48-000120, a possible homestead or ranch house at MP 22.6. None of the resources have been formally evaluated for inclusion on the California Register and none appear to satisfy California Register Criteria 1-4. EP-1 appears to avoid all of these sites.

Mitigation Segment EP-2. No prehistoric or historic era sites have been recorded or reported within the mitigation segment.

Implementation of the Mitigation Measures for Impacts Cul-1, Cul-2, and Cul-3 will ensure that all impacts are less than significant (Class II).

D.5.5 Environmental Impacts of the No Project Alternative

The No Project Alternative will result in the continued use of the existing pipeline, along with projected repair to portions of the line and the addition of booster pumps. These construction activities would be primarily within railroad ROW, minimizing the potential for impacts to cultural resources. This alternative will not permit the use of more environmentally appropriate and proactive construction, system monitoring, and maintenance necessary for the economical transportation of petroleum products between stations in the system. Emergency repair and response to more frequent accidents could potentially result in impacts to unknown cultural resources as a result of additional construction and excavation within the present alignment, but this impact is less than significant (Class III) due to its limited extent. The use of trucks and trains along existing road and tracks would have little effect on cultural resources.

D.5.6 Mitigation Monitoring, Compliance, and Reporting Table

Table F-4 presents the mitigation monitoring program for cultural resources.